

Advanced Algebra
Systems of Equations Review wkst 10

Name Key

1. Solve the system of equations by using your graphing calculator.

$$\begin{aligned} 2x + 2y &= 4 \\ x - 2y &= 0 \end{aligned}$$

$$(1\frac{1}{3}, \frac{2}{3})$$

2. Write a system of equations that has no solutions.

$$y = \frac{1}{2}x + 3$$

$$y = \frac{1}{2}x + 5$$

any 2 w/ same slope

3. Write a system of equations that has an infinite number of solutions.

$$y = \frac{1}{3}x + 5$$

$$-\frac{1}{3}x + y = 5$$

same equations.

4. Solve the system of equations by using the substitution method.

$$\begin{aligned} 2x + 3y &= -3 \\ x + 2y &= 2 \end{aligned}$$

$$x = -2y + 2$$

$$2(-2y + 2) + 3y = -3$$

$$-4y + 4 + 3y = -3$$

$$-y = -7 \quad y = 7$$

$$x + 2(7) = 2$$

$$x + 14 = 2$$

$$x = -12$$

$$(-12, 7)$$

5. Solve each system of equations by using the elimination method.

$$\begin{aligned} a. \quad 35a + 4b &= 12 \\ 27a - 6b &= 40 \end{aligned}$$

$$15a + 12b = 36$$

$$14a - 12b = 80$$

$$\begin{aligned} 29a &= 116 \\ 29 & \quad 29 \end{aligned}$$

$$a = 4$$

$$5(4) + 4b = 12$$

$$20 + 4b = 12$$

$$4b = -8 \quad b = -2$$

$$(4, -2)$$

$$b. \quad x + 3y = 27$$

$$x + 3y = 27$$

$$-2(\frac{1}{2}x + 3y = 19)$$

$$-x - 6y = -38$$

$$-3y = -11$$

$$x + 3(\frac{11}{3}) = 27$$

$$x + 11 = 27$$

$$x = 16$$

$$(16, \frac{11}{3})$$

$$10. \quad \begin{aligned} 0.4m + 1.8n &= 8 \\ 1.2m + 3.4n &= 16 \end{aligned}$$

$$\begin{aligned} -3(4m + 18n &= 80) \\ 12m + 34n &= 160 \end{aligned}$$

$$-12m + -54n = -240$$

$$\rightarrow 12m + 34n = 160$$

$$-20n = -80$$

$$n = 4$$

$$4m + 72 = 80$$

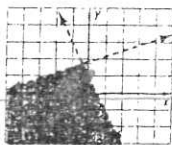
$$4m = 8$$

$$m = 2$$

$$(m, n) = (2, 4)$$

6. Write a system of inequalities that represents the graph.

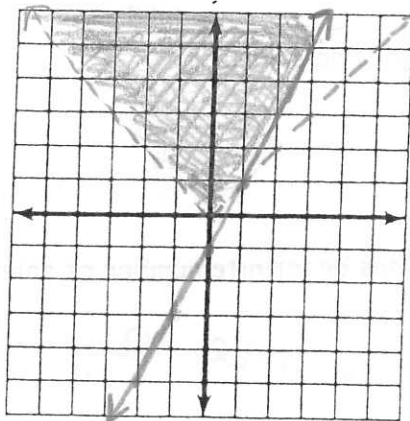
$$\begin{aligned} y &< -2x + 1 \\ y &< \frac{1}{4}x + 2 \end{aligned}$$



7. Solve the system of equations by graphing.

$$\begin{aligned} y &> |x| \\ 2x - y &\leq 1 \end{aligned}$$

$$\begin{aligned} -y &\leq -2x + 1 \\ y &\geq 2x - 1 \end{aligned}$$



8. Solve the system of equations by using the elimination method.

$$\begin{aligned} 2x + 2y + z &= 10 \\ -2x + y + 3z &= 5 \\ 2x - 3y - 5z &= 27 \end{aligned}$$

$$\begin{aligned} -2x + y - 3z &= 5 \\ 2x - 3y - 5z &= 27 \end{aligned}$$

$$\textcircled{4} -2y - 8z = 32$$

$$\begin{aligned} -2y - 8z &= 32 \\ -40y + 8z &= -200 \end{aligned}$$

$$-42y = -168$$

$$\textcircled{y = 4}$$

$$\begin{aligned} 2x + 4y + 2z &= 20 \\ -2x + y - 3z &= 5 \end{aligned}$$

$$\textcircled{5} (5y - 2z = 25)$$

$$-2(4) - 8z = 32$$

$$-8 - 8z = 32$$

$$-8z = 40$$

$$\textcircled{z = -5}$$

$$x + 8 - 5 = 10$$

$$x + 3 = 10$$

$$x = 7$$

$$\textcircled{(7, 4, -5)}$$